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Appeal
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IN THE UNITED STATES PATENT OFFICE

Application No: 09/657,111 ✓
Applicants: Curtis A. Vock et al.
Filed: September 7, 2000 ✓
Title: Event and Sport Performance Methods and Systems ✓
Examiner: Tung S. Lau
Art Unit: 2863
Docket: 389014

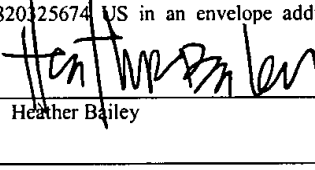
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February 21, 2003

Date


Heather Bailey

Assistant Commissioner for Patents
Washington, DC 20231

APPEAL BRIEF

Dear Sir:

In accord with 37 CFR 1.192, Appellants hereby file their appeal brief in support of their Appeal in the above-identified matter. A one-month extension of time is included herewith to extend the period of response to and including February 22, 2003. A notice of appeal was filed November 22, 2002. Three copies of this brief are enclosed, as required under 37 CFR 1.192(c). The \$160 fee required by 37 CFR 1.17c is enclosed herewith.

(1) Real party in interest. The real party of interest is PhatRat Technology, Inc., a Delaware corporation, with an office location of 3165 10th Street, Boulder, Colorado; the full right, title, and interests in this application and accorded to PhatRat Technology are illustrated by way of fully-executed assignments recorded with the U.S. Patent and Trademark Office.

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(2) Related appeals and interferences. None.

(3) Status of claims. Claims 1-12 are pending in the application. Applicants appeal all claims 1-12. All claims 1-12 stand rejected based upon 35 USC 103(a). Claims 1-12 stand rejected under 35 USC 103(a) as being unpatentable over U.S. Patent No. 6,324,296 ("McSheery") in view of U.S. Patent No. 6,157,898 ("Marinelli").

(4) Status of amendments. This application was filed on September 7, 2000, claiming benefit of priority to U.S. provisional application no. 60/152,688 filed on September 7, 1999. Applicants filed a response on August 19, 2002, amending claims 1-11 and adding claim 12. A final rejection was mailed on September 24, 2002. No amendments to the claims were made subsequent to this final office action. Applicants subsequently filed a timely Notice of Appeal on November 22, 2001.

(5) Summary of the invention. The inventions of claims 1-7, 12 relate to determining a peak altitude of a moving sportsman by viewing the sportsman with a digital camera, assessing the sportsman's movements within frames of data from the digital camera, and determining peak altitude by comparing a highest point of motion to a reference object in the scene. See paragraphs 9-11 of Applicants' specification; Figures 1-2 illustrate structure and steps of claim 1. The digital camera is for example shown as item 12 in Figure 1. The frames of data and determining peak altitude are for example shown in Figure 2. The frames of data may be transmitted over a data link 15, Figure 1, to determine motion within the frames, as in claim 2. An automatic determination of a motion track 17, Figure 2, may also be determined as in claim 3. Through the motion track, an airtime of the sportsman may be determined, e.g., from start to landing in Figure 2, as in claim 4. The inventions of 8-11 relate to determining the airtime of a moving sportsman, by mounting a radio beacon on the sportsman and triangulating on the sportsman to determine airtime from location data. See Figure 3 and paragraph 12. A radio beacon 58 is shown in Figure 3. Radio triangulation is made through antenna 62 and computer 64, which processes data to determine location and the airtime.

(6) Issues.

A. Whether claims 1-7, 12 are patentable over the combination of the applied McSheery and Marinelli references, under 35 USC 103(a).

B. Whether claims 8-11 are patentable over the combination of the applied McSheery and Marinelli references, under 35 USC 103(a).

(7) Grouping of claims. Group I consists of claims 1-7, 12. The claims of Group I do not stand or fall together. Group II consists of claims 8-11. The claims of Group II do not stand or fall together.

(8) Argument (A). The Examiner's rejections of claims 1-7, 12 under 35 USC 103(a) as being unpatentable over McSheery in view of Marinelli.

The following is a quotation of from the MPEP setting forth the three basic criteria that must be met to establish a *prima facie* case of obviousness:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.1991).

Applicants contend that McSheery and Marinelli do not render any of claims 1-7, 12 *prima facie* obvious. **First, McSheery and Marinelli do not teach, suggest or motivate the limitations set forth in claims 1-7, 12.** Applicants' claim 1 is set forth below; claim 1 is the only independent claim in Group I.

1. A method for determining peak altitude of a moving sportsman, comprising:
viewing the sportsman through a digital camera;
assessing frames of data provided by the digital camera to locate motion within the frames of data; and

determining the peak altitude by comparing the highest point of motion by the sportsman within the frames of data to a reference object.

McSheery discloses tracking individually-modulated light points; a camera 108 is used to image light in the motion capture environment along two axes. *See col. 5, lines 17-30.* Not once does McSheery disclose determining a peak altitude or viewing a moving sportsman through frames of data from a digital camera. Importantly, McSheery is absolutely silent as to comparing a highest point of motion of the sportsman to a reference object, as required by claim 1 and shown clearly in Applicants' FIG. 1 and FIG. 2.

In the final office action of September 24, 2002, the Examiner points to specific locations within McSheery that purportedly show elements of Applicants' claim 1. First, the Examiner refers to col. 3, lines 1-16 of McSheery to point to a digital camera. However, this section of McSheery only discusses prior art motion capture systems with active markers. Second, the Examiner refers to sol. 17, lines 1-15 to point to "frames of data." However, this section of McSheery only teaches tracking markers with a DSP. Pointedly, this section of McSheery does not disclose tracking a human to a point of highest location. Third, the Examiner refers to col. 1, lines 5-13 to point to "analyzing in time domain". However, this section only discusses a general nature of motion capture. Fourth, the Examiner refers to col. 3, lines 9-16 to point to a 30Hz system. This section has little application to claim 1.

Marinelli also does not teach these steps. The Examiner states on page 2 that McSheery does not disclose detecting peak altitude; however the Examiner states that Marinelli discloses determining peak altitude. This is incorrect. Marinelli never teaches use of a digital camera nor the utilization of frames of data and a reference object to determine the peak altitude. Marinelli specifically and only discloses an accelerometer network 102 attached to an object like a baseball; never once does Marinelli disclose a digital camera viewing an athlete to determine altitude.

Accordingly, by these reasons alone Marinelli and McSheery fail as 35 USC §103 references. Quite simply, they do not show or teach each and every element of claim 1.

Second, there is no motivation or suggestion to combine reference teachings of McSheery and Marinelli. Moreover, even if the references were combined, it would not result in the invention – hence there is no reasonable likelihood of success.

McSheery and Marinelli do not suggest or otherwise motivate a combination of the two references. The Examiner also has not provided such suggestion or motivation as required in MPEP 706.02(j): “The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. ‘To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.’, *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).” Accordingly, it is only by hindsight that the Examiner has chosen these references to begin with.

It is noteworthy that on page 4, the Examiner says that “any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning”. Although we can understand the point, we still contend that the Examiner must show what the level of skill in the prior art is by evidence – which is certainly not shown in McSheery and Marinelli. Specifically, we contend that such prior art evidence is not available because Applicants’ claim 1 is patentably distinct.

Finally, combining McSheery and Marinelli would not result in the invention of claim 1 since these references do not teach the elements of claim 1, as argued above. There is therefore no reasonable likelihood of success in combining the references and the Examiner has not then established *prima facie obviousness*. By way of example, McSheery teaches the tracking of individual points of light; Marinelli teaches measurement of baseball characteristics with an accelerometer network. There is no way to reasonably combine such references to render Applicants’ claim 1.

The above arguments apply to each of claims 2-7, 12 as these claims depend from claim 1. In addition, however, and as set forth in the Appendix hereto, these claims have additional features that patentably distinguish over McSheery and Marinelli.

For example, claim 2 recites the step of sending frames of data to a computer through a data link and evaluating the frames of data to determine motion within the frames. Neither Marinelli nor McSheery disclose this step in the context of claim 1.

Claim 3 recites the step of automatically determining a motion track of the sportsman through time. Again, neither Marinelli nor McSheery disclose this step in the context of claim 1.

Claim 4 recites the step of determining airtime from the track. McSheery has absolutely no disclosure of "airtime". Marinelli discloses use of the accelerometer network within a football, but again has absolutely no disclosure of determining airtime from a track based on a digital camera.

Claim 6 recites a method of determining the speed of the sportsman by evaluating physical movement of the sportsman through successive frames of data. Once again, such disclosure is completely absent from McSheery and Marinelli.

In claim 12, although McSheery mentions use of a 30Hz camera (albeit, not for use within a system such as Applicants' claim 1), McSheery specifically teaches away from a higher speed camera, in col. 3, lines 9-16 (cited by the Examiner). Claim 12 specifically refers to capturing data at more than 60Hz, so that peak altitude and airtime are captured with sufficient accuracy. Neither McSheery nor Marinelli disclose this feature.

Argument A summary: McSheery and Marinelli do not teach the features of claim 1; combining McSheery with Marinelli would not result in the invention of claim 1; similarly, McSheery and Marinelli do not teach combined features of claim 1 with claims 2-7, 12; the Examiner has not shown motivation in combining references of McSheery and Marinelli; McSheery and Marinelli, if combined, would also not teach the inventions of claims 1-7, 12; the Examiner has not proven prima facie obviousness and/or Applicants have rebutted obviousness

rejections with structural differences and, for example, arguments that Examiner used impermissible hindsight.

Argument (B). *The Examiner's rejections of claim 7-11 under 35 USC 103(a) as being unpatentable over McSheery in view of Marinelli.*

Claim 8 provides the following:

8. A method of determining the airtime of a moving sportsman, comprising the steps of mounting a radio beacon on the sportsman, monitoring the location of the sportsman through triangulation to determine the location of the sportsman over time, and determining the airtime from the location over time.

We have already explained why McSheery and Marinelli are inapplicable to the teachings of claim 1. Similarly, these references are not applicable to claim 8. By way of example, neither reference – at all – recites use of a beacon to triangulate and determine airtime of a moving sportsman. The Examiner's arguments are simply not applicable to claim 8. A combination of McSheery with Marinelli would also not result in the invention of claim 8; hence there is no chance of success. There is also no motivation or suggestion of combining the references as the Examiner has done without a strong inference of hindsight.

The above arguments apply to each of claims 9-11 as these claims depend from claim 8. In addition, however, and as set forth in the Appendix hereto, these claims have additional features that patentably distinguish over McSheery and Marinelli.

Claim 9 for example recites determining a peak speed of the sportsman during motion of the sportsman by evaluating the location through successive time intervals. Once again, McSheery and Marinelli are silent as to this feature.

Claim 10 recites determining a final speed of the sportsman just prior to a landing by determining a final speed of the sportsman just prior to the landing. McSheery and Marinelli are also silent as to this feature.

Claim 11 recites determining the airtime of the sportsman by evaluating the motion of the sportsman through the air from a first ground location to a landing location. And again, McSheery and Marinelli are silent as to this feature.

In summary, the Examiner has not made a *prima facie* case of obviousness for any of claims 8-11. Most importantly, the cited references of McSheery and Marinelli do not teach every element of claims 8-11, and neither do they teach or motivate changes to do so.

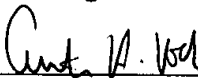
(9) **Appendix.** Applicants enclose a copy of the claims involved in this appeal as an appendix hereto.

Conclusions

Accordingly, Applicants respectfully submit that the claims Groups I-II patentably distinguish over the art of record. No further fees are deemed due in connection with this matter. However, the Commissioner is hereby authorized to charge any fees which may be due in this matter from Deposit Account Number 12-0600.

Respectfully submitted,

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February 21, 2003

APPENDIX TO APPEAL BRIEF

1. (Once amended) A method for determining peak altitude of a moving sportsman, comprising:

viewing the sportsman through a digital camera;
assessing frames of data provided by the digital camera to locate motion within the frames of data; and
determining the peak altitude by comparing the highest point of motion by the sportsman within the frames of data to a reference object.
2. A method of claim 1, further comprising the steps of sending the frames of data to a computer through a data link and evaluating the frames of data to determine motion within the frames.
3. A method of claim 2, further comprising the step of automatically determining a motion track of the sportsman through time.
4. A method of claim 3, further comprising the step of determining airtime from the track.
5. A method of claim 4, wherein the camera comprises a digital camcorder and wherein the link comprises a Firewire connection.
6. A method of claim 3, further comprising the step of determining the speed of the sportsman by evaluating physical movement of the sportsman through successive frames of data.
7. (Once amended) A method of claim 1, further comprising the step of capturing the frames of data at at least 30Hz.
8. (Once amended) A method of determining the airtime of a moving sportsman, comprising the steps of mounting a radio beacon on the sportsman, monitoring the location of the

sportsman through triangulation to determine the location of the sportsman over time, and determining the airtime from the location over time.

9. (Once amended) A method of claim 8, further comprising determining a peak speed of the sportsman during motion of the sportsman by evaluating the location through successive time intervals.

10. (Once amended) A method of claim 8, further comprising determining a final speed of the sportsman just prior to a landing by determining a final speed of the sportsman just prior to the landing.

11. (Once amended) A method of claim 8, further comprising determining the airtime of the sportsman by evaluating the motion of the sportsman through the air from a first ground location to a landing location.

12. A method of claim 7, further comprising the step of capturing the frames of data at more than 60Hz.